FIG. 1

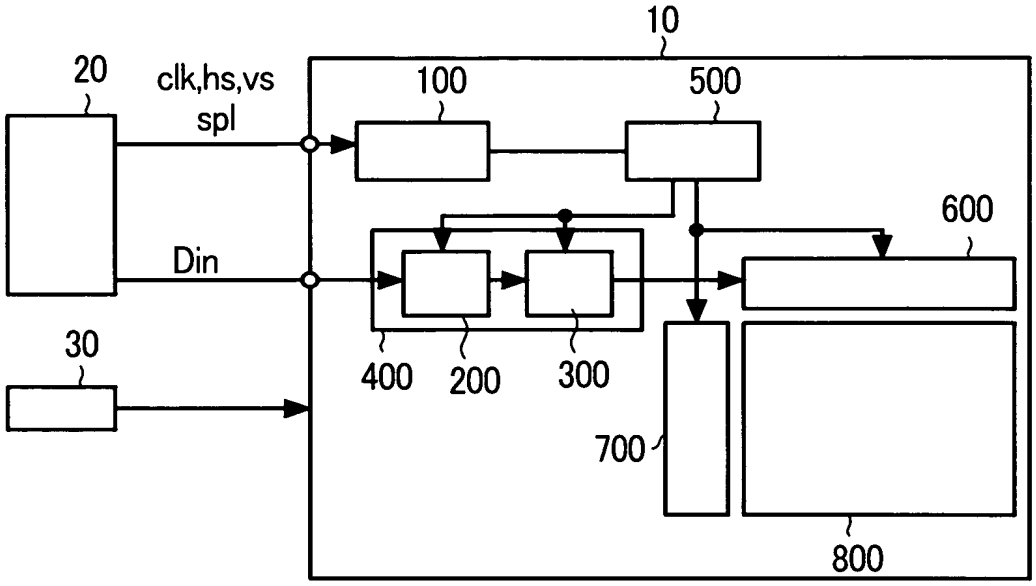

10
20
clk,hs,vs
spl
100
500
600
Din
30
400
200
300
700
800

FIG. 2

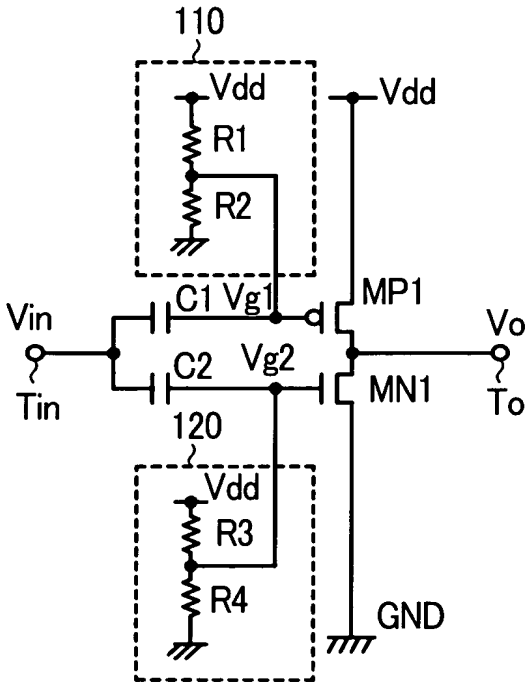

110
Vdd
R1
R2
Vdd
C1 Vg1
MP1
Vin
Vo
C2
Vg2
MN1
Tin
To
120
Vdd
R3
R4
GND

FIG. 3

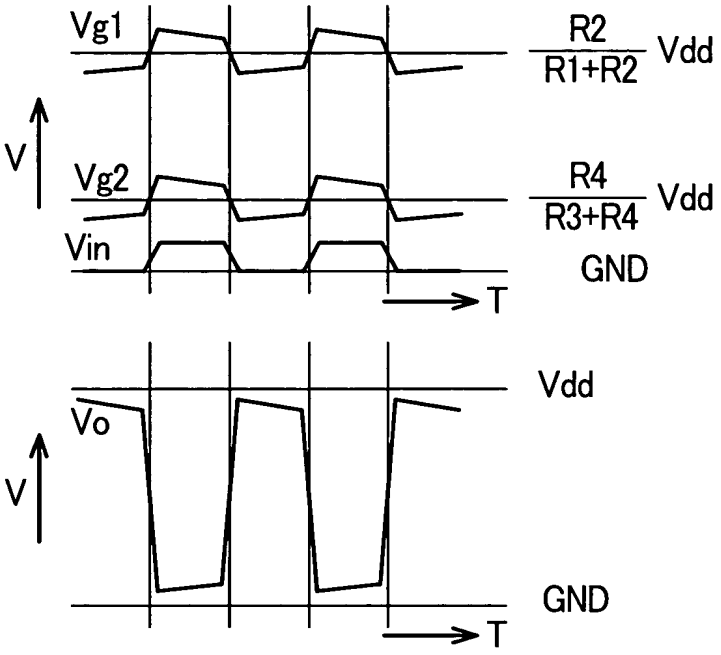

Vg1
R2
R1+R2
Vdd
V
Vg2
R4
R3+R4
Vdd
Vin
GND
T
Vdd
Vo
V
GND
T

FIG. 4

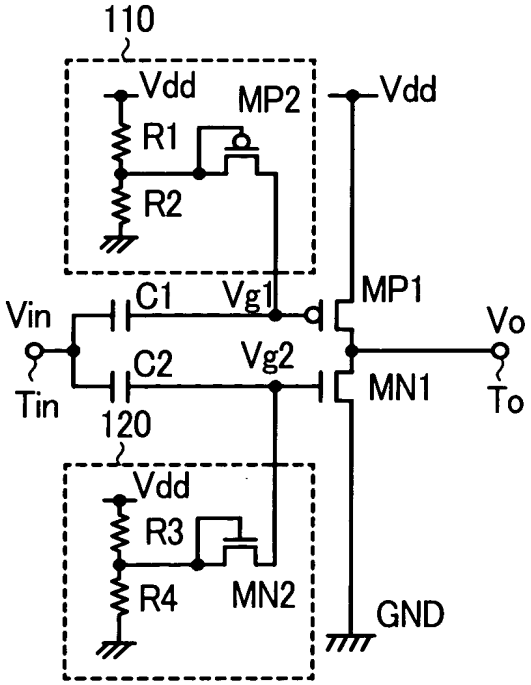

110
Vdd
MP2
Vdd
R1
R2
MP1
Vin
C1
Vg1
Vo
C2
Vg2
MN1
Tin
To
120
Vdd
R3
R4
MN2
GND

FIG. 5

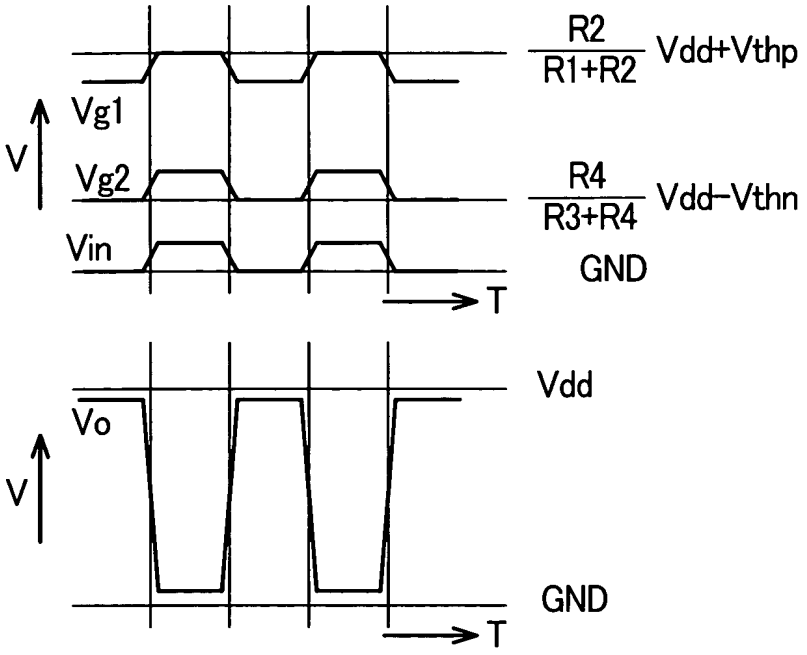

R2
R1+R2
Vdd+Vthp
Vg1
V
Vg2
R4
R3+R4
Vdd-Vthn
Vin
GND
T
Vdd
Vo
V
GND
T

FIG. 6

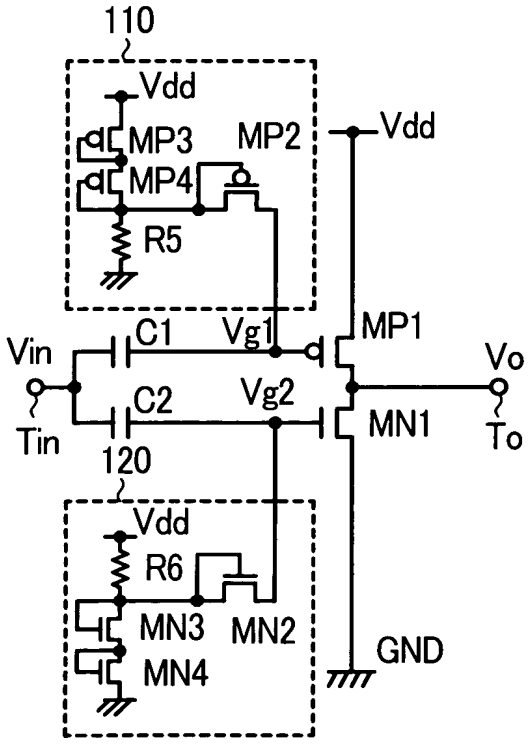

110
Vdd
MP3
MP2
MP4
R5
Vdd
C1
Vg1
MP1
Vin
Vo
C2
Vg2
MN1
Tin
To
120
Vdd
R6
MN3
MN2
MN4
GND

FIG. 7

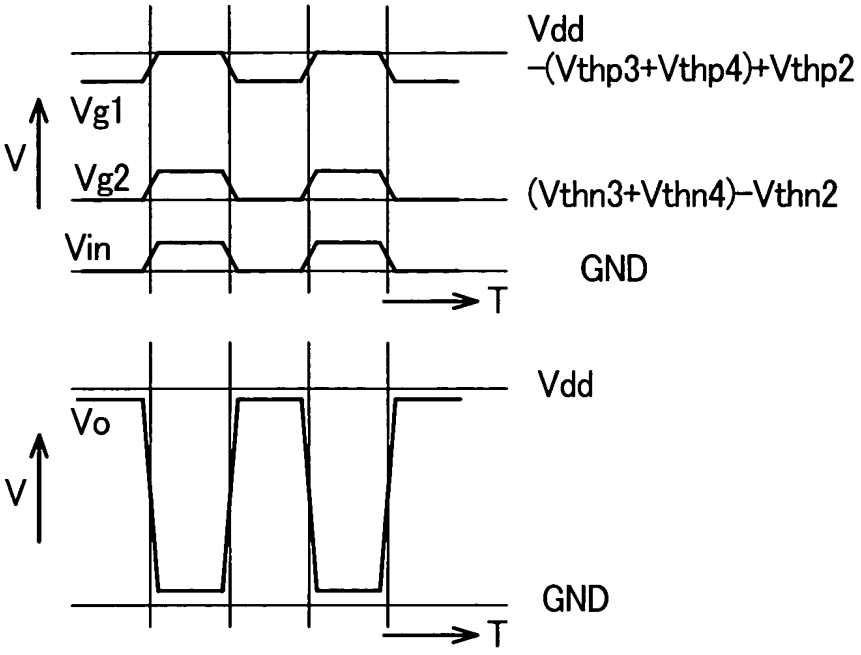

Vdd
-(Vthp3+Vthp4)+Vthp2
Vg1
V
Vg2
(Vthn3+Vthn4)-Vthn2
Vin
GND
T
Vdd
Vo
V
GND
T

FIG. 8

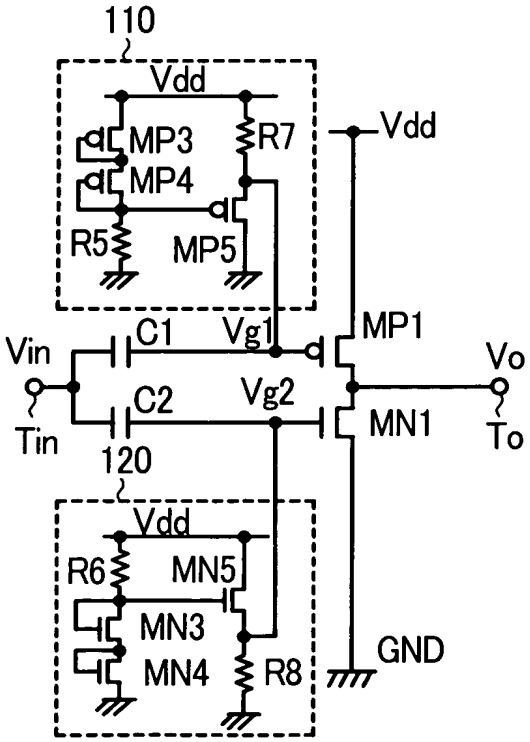

110
Vdd
MP3
R7
MP4
R5
MP5
Vdd
C1
Vg1
MP1
Vin
Vo
C2
Vg2
MN1
Tin
To
120
Vdd
R6
MN5
MN3
MN4
R8
GND

FIG. 9

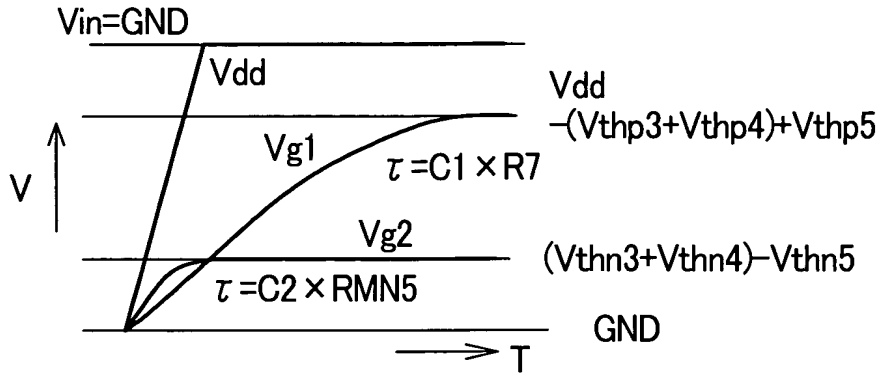

Vin=GND
Vdd
Vdd
-(Vthp3+Vthp4)+Vthp5
Vg1
τ =C1 × R7
V
Vg2
(Vthn3+Vthn4)-Vthn5
τ =C2 × RMN5
GND
T

FIG. 10

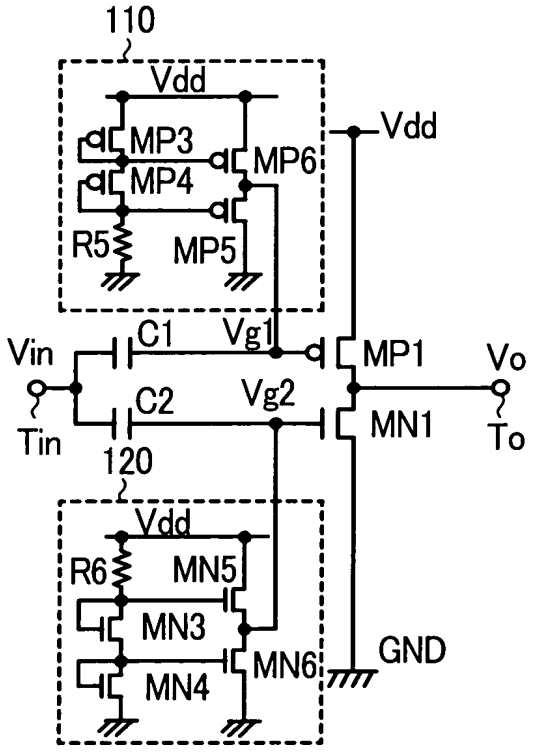

110
Vdd
MP3
MP6
MP4
R5
MP5
Vdd
Vin
C1
Vg1
MP1
Vo
Tin
C2
Vg2
MN1
To
120
Vdd
R6
MN5
MN3
MN6
GND
MN4

FIG. 11

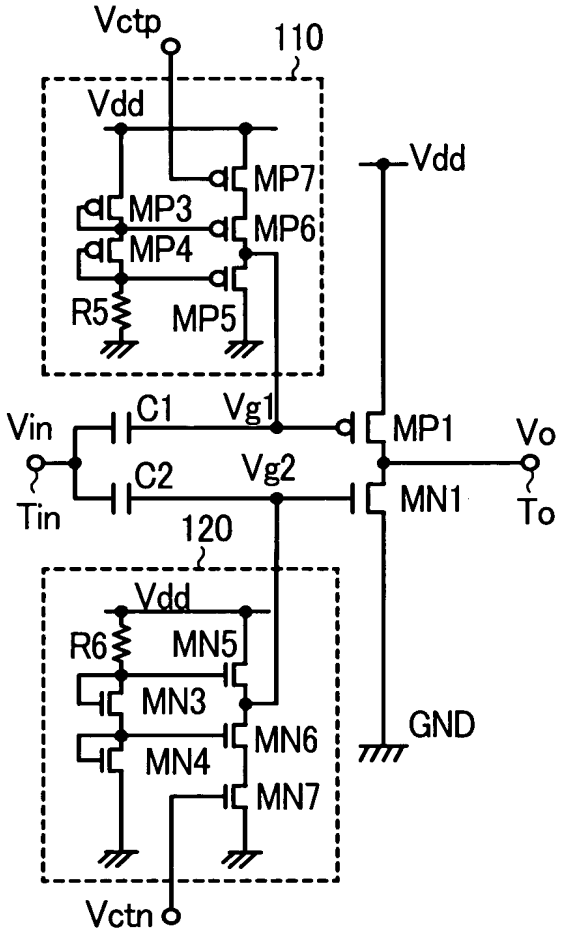

Vctp
110
Vdd
MP7
MP3
MP6
MP4
R5
MP5
Vdd
Vin
C1
Vg1
MP1
Vo
Tin
C2
Vg2
MN1
To
120
Vdd
R6
MN5
MN3
MN6
MN4
MN7
GND
Vctn

FIG. 12

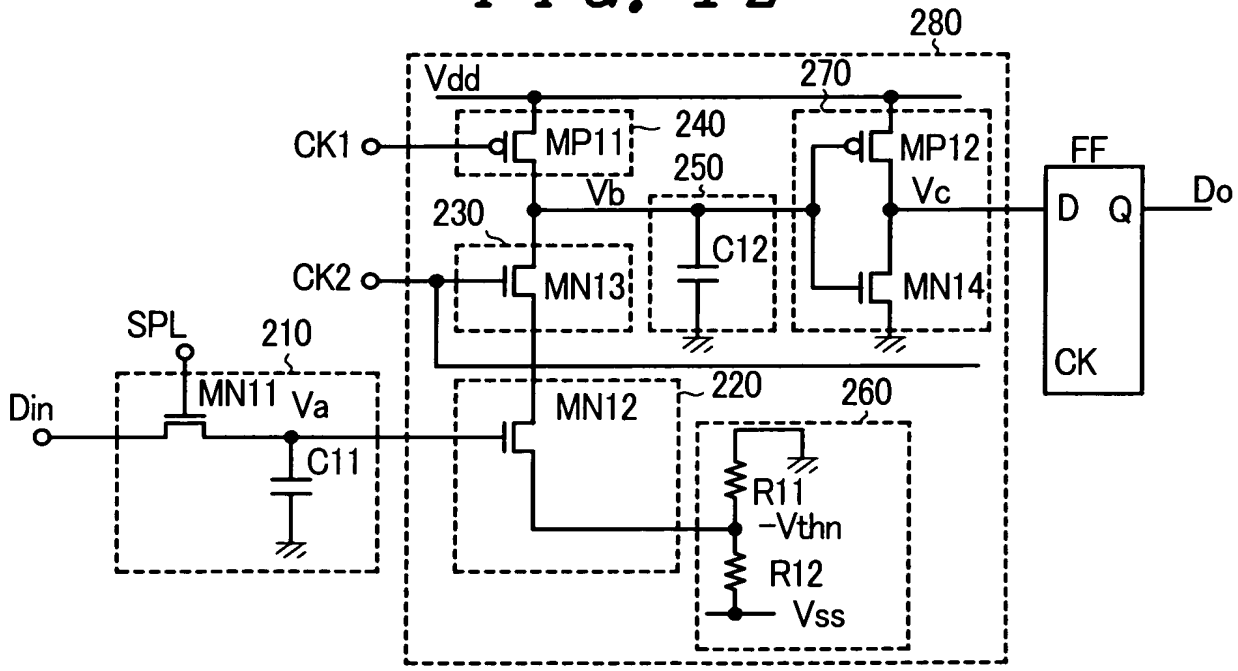
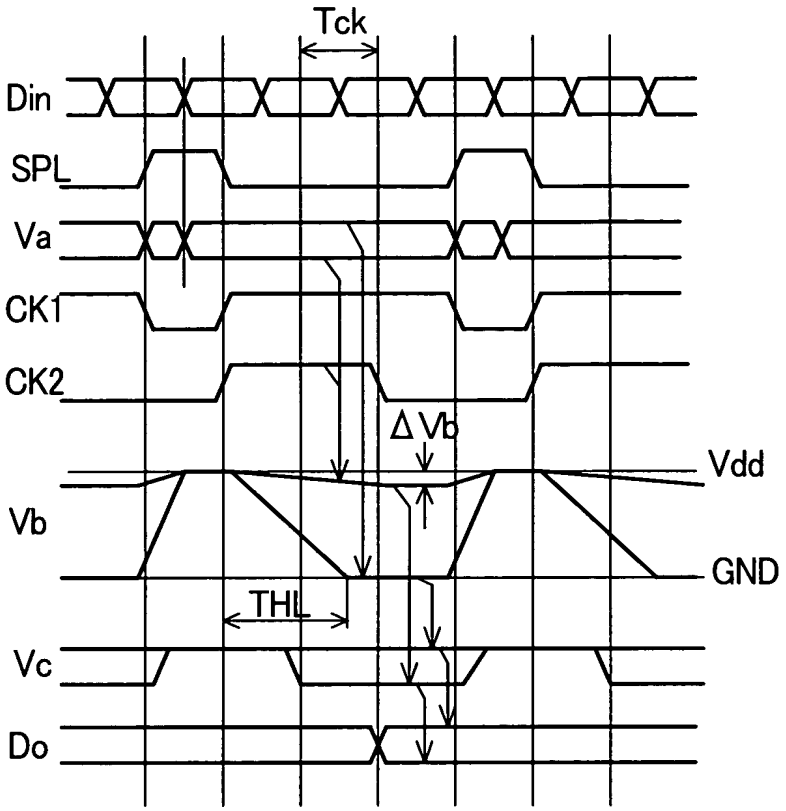

280
Vdd
270
CK1
MP11
240
MP12
FF
250
Vb
Vc
D Q
Do
230
C12
CK2
MN13
MN14
SPL
210
CK
Din
MN11
Va
220
MN12
260
C11
R11
-Vthn
R12
Vss

FIG. 13



$$\Delta Vb = \frac{Ioff(MN12) \times 2Tck}{C12}$$

$$THL = \frac{C12 \times Vdd}{Ion\ (MN12)}$$

FIG. 14

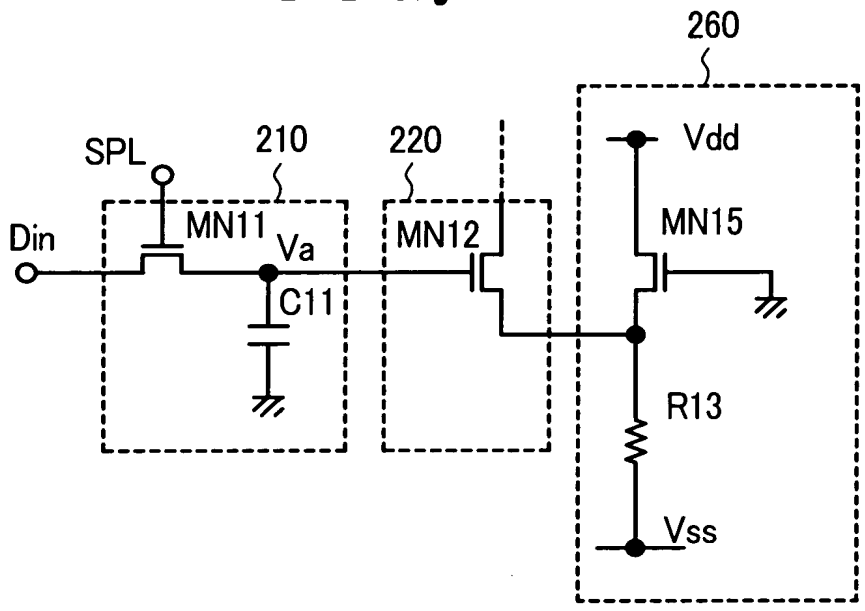


FIG. 15

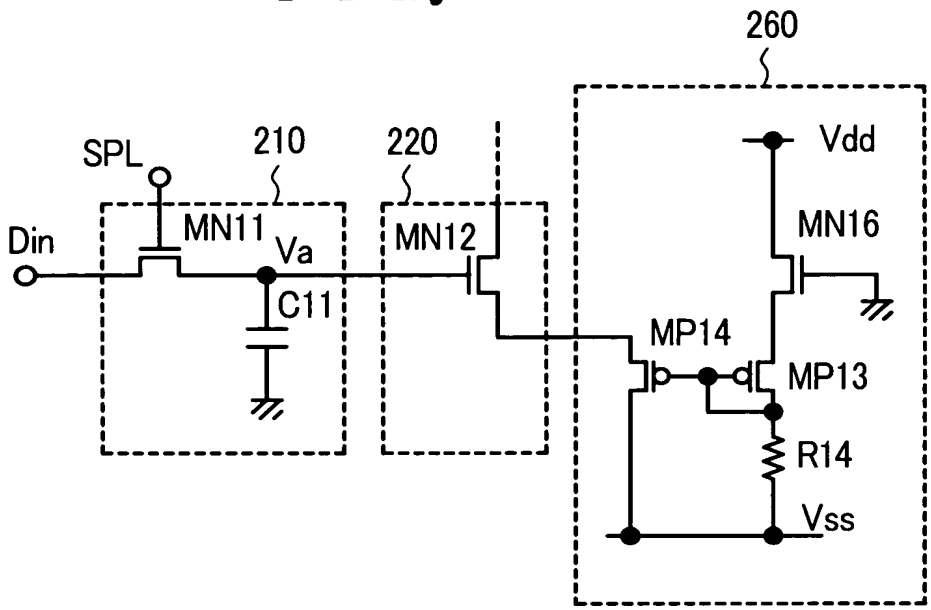

260
SPL
210
220
Vdd
Din
MN11
Va
MN12
MN16
C11
MP14
MP13
R14
Vss

FIG. 16

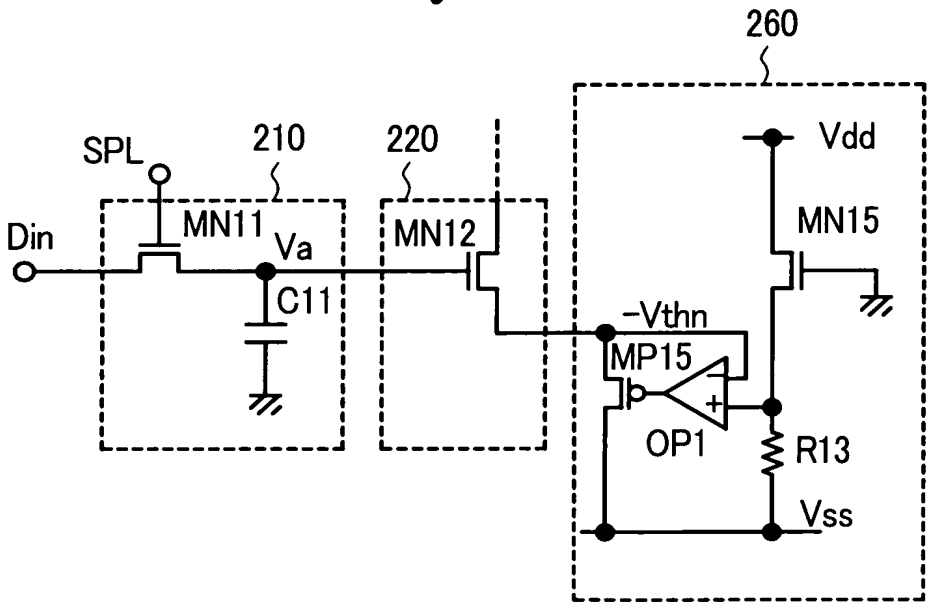

260
SPL
210
220
Vdd
Din
MN11
Va
MN12
MN15
C11
-Vthn
MP15
OP1
R13
Vss

FIG. 17

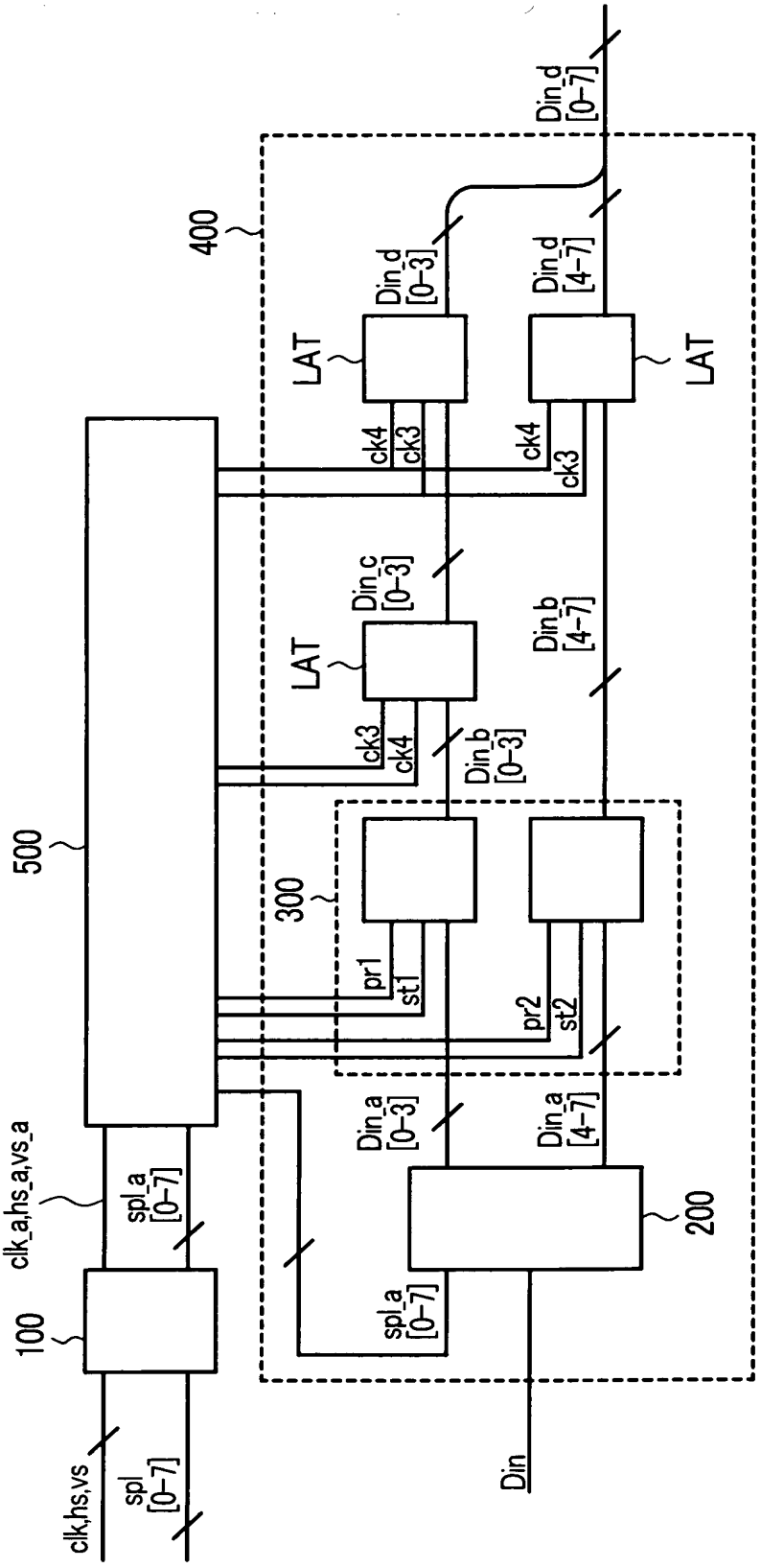
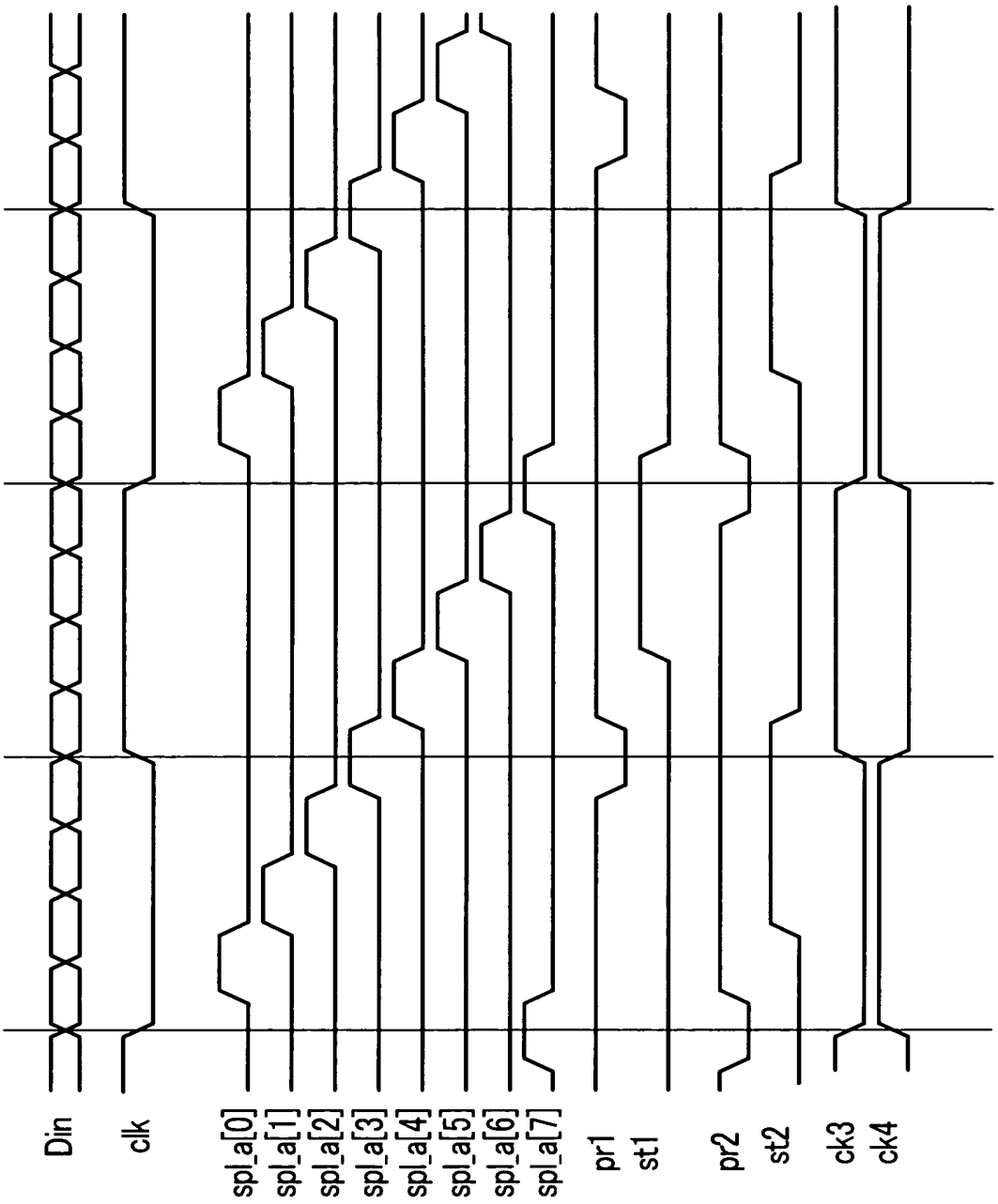

clk,hs,vs
spl [0-7]
100
clk_a,hs_a,vs_a
spl_a [0-7]
500
400
300
200
LAT
LAT
LAT
Din_d [0-3]
Din_d [4-7]
Din_c [0-3]
Din_b [4-7]
Din_b [0-3]
Din_a [0-3]
Din_a [4-7]
Din
ck4
ck3
ck3
ck4
ck3
ck4
pr1
st1
pr2
st2
spl_a [0-7]

FIG. 18


Din
clk
spl_a[0]
spl_a[1]
spl_a[2]
spl_a[3]
spl_a[4]
spl_a[5]
spl_a[6]
spl_a[7]
pr1
st1
pr2
st2
ck3
ck4